

I/We claim:

1. A process for evaluating the hermeticity of a wafer connection (200), the process comprising

- manufacturing of a test structure (100) by
 - forming a micromechanical sensor structure (3) and an adjacent melt structure (4) with electric strip conductors (6a, 6b) and first contacting islands (7) which are connected with the micromechanical sensor structure (3) and second contacting islands (8) which are connected with the melt structure (4) on a base wafer (1),
 - creating of a cavity (5) by connecting the cover wafer (2) with the base wafer (1) so that the micromechanical sensor structure (3) and the melt structure (4) are located in the cavity (5);
- impressing of a current into the second contacting islands (8) in order to cause the melt structure (4) to melt for the purpose of the hermeticity test of the cavity (5), whereby a change in pressure is generated in the interior of the cavity (5), which change has a chronological course which is measured by means of the micromechanical sensor structure (3).

2. The process according to claim 1 which comprises furthermore: manufacturing of several microelectromechanical structures (201) on the wafer connection (200).

3. The process according to claim 2, wherein several test structures (100) are produced at specific points of the wafer connection (200).

4. The process according to claim 3, wherein the several test structures (100) are disposed in accordance with predetermined criteria of quality monitoring for the microelectromechanical structures (201).

5. The process according to any of claims 1 to 5, wherein the test structure (100) that is under the changed pressure is specifically subjected to stress conditions and wherein information on the reliability is obtained by comparing the measuring values of the micromechanical sensor structure (3) before and after the exerting of the stress condition.

6. A process for monitoring the function of a microelectromechanical structure (201), the process comprising:

- manufacturing of a test structure (100) by
 - forming a micromechanical sensor structure (3) and an adjacent melt structure (4) with electric strip conductors (6a, 6b) and first contacting islands (7) which are connected with the micromechanical sensor structure (3) and second contacting islands (8) which are connected with the melt structure (4) on a base wafer (1),
 - creating of a cavity (5) by connecting a cover wafer (2) with the base wafer (1) so that the micromechanical sensor structure (3) and the melt structure (4) are located in the cavity (5);
- manufacturing of the microelectromechanical structure (201) so that it forms a functional bond with the test structure (100);
- operating of the microelectromechanical structure (201);
- impressing of a current into the melt structure (4) of the test structure (100);
- evaluating of the measuring values of the micromechanical sensor structure (3) in order to implement an online monitoring of the microelectromechanical structure (201).

7. The process according to claim 6, wherein the melt structure (4) of the test structure (100) has several rated melting points (4a, 4b) and wherein the process further comprises: successive activating of a melting process of the several rated melting points and evaluating of the measuring results obtained from the micromechanical sensor structure (3) in order to implement the online monitoring.

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8. **A test structure** for evaluating the hermeticity of wafer connections comprising
- an area of a base wafer (1) and an area of a cover wafer (2),
 - a cavity (5) that is formed by a wafer connection of the base wafer (1) and the cover wafer (2),
 - a pressure-sensitive micromechanical structure (3) that is disposed in the cavity (5),
 - a melt structure (4) that is disposed in the cavity (5),
 - first contacting islands (7) that are located outside the cavity (5) and connected with the pressure-sensitive micromechanical structure (3),
 - second contacting islands (8) that are disposed outside the cavity (5) and connected with the melt structure (4),
 - strip conductors (6a, 6b) that form a connection from the melt structure (4) to the second contacting islands (8) and from the pressure-sensitive micromechanical structure (3) to the first contacting islands (7).
9. The test structure according to claim 8, wherein the melt structure comprises a rated melting point (4a, 4b).
10. The test structure according to claim 8 and/or 9, wherein the melt structure is composed of metal.
11. The test structure according to claim 10, wherein the metal contains aluminum.
12. The test structure 11, wherein, in the case of a current flow, melting parts of the melt structure (4) extends in a meander-like fashion in the cavity (5).
13. The test structure according to at least one of claims 8 to 12, wherein several rated melting points (4a, 4b) are provided in the melt structure (4) and wherein the rated melting points (4a, 4b) are defined by the design of the melt structure (4), whereby a limited number of melting processes can be successively repeated.

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14. A wafer connection (200) comprising

- a test structure (100) for evaluating the hermeticity of the wafer connection (200) having
 - a base wafer (1) and a cover wafer (2),
 - a cavity (5) that is formed by the wafer connection of the base wafer (1) and the cover wafer (2),
 - a pressure-sensitive micromechanical structure (3) that is disposed in the cavity (5),
 - a melt structure (4) that is disposed in the cavity (5),
 - first contacting islands (7) that are located outside the cavity (5) and connected with the pressure-sensitive micromechanical structure (3),
 - second contacting islands (8) that are located outside the cavity (5) and connected with the melt structure (4), and
 - strip conductors (6a, 6b) that form a connection from the melt structure (4) to the second contacting islands (8) and from the pressure-sensitive micromechanical structure (3) to the first contacting islands (7),
- a microelectromechanical structure (201).

15. The wafer connection according to claim 14, wherein several test structures (100) and several microelectromechanical structures (201) are provided.

16. The wafer connection according to claim 15, wherein the several test structures (100) are disposed in accordance with the criteria for quality assurance of the several microelectromechanical structures (201).

17. The wafer connection according to claim 14 or 15, wherein the test structure (100) and the microelectromechanical structure (201) are disposed as a bond.

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